# EMSE 6740 Final Project

# Dynamic Modeling of Meat Production

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Variables in the model: beef total production, beef import, beef export, beef production in US, beef stocks (cold storage), pork production, pork import, pork export, pork production in US, pork stocks (cold storage), lamb production, lamb import, lamb export, lamb production in US, lamb stocks (cold storage), beef price, pork price, lamb price, population, GNI (Gross National Income), CPI (Consumer Price Index)

Dataset: CPI.Food from U.S. Bureau of Labor Statistics, GNI from world bank, Livestock prices and MeatSD from Data.gov.

Stocks:

1. Population

In\_flows: machine learning prediction population increasing rate

1. Beef/Pork/Lamb production

In\_flows: import, production in US, stocks (cold storage) at the beginning

Out\_flows: export, stocks (cold storage) in the end, increasing of population (consumption)

1. Beef/Pork/Lamb price

In\_flows: CPI, GNI, decreasing price of substitute, decreasing of beef production, increasing of population

Out\_flows: increasing price of substitute, increasing of beef production

1. Beef/Pork/Lamb stock (cold storage)
2. Beef/Pork/Lamb import/export

Flows:

1. Beef/Pork/Lamb consume
2. Population increasing
3. Beef/Pork/Lamb price changing

Statistic:

1. GNI: statistic data from world bank
2. CPI: statistic data from U.S. Bureau of Labor Statistics

There are lots of other factors, such as food safety, price of corn (use for feeding livestock), etc., which will affect the price of meat. These factors will be the future work for this project.